MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2017/2018

BEC2054 –ECONOMETRICS II

(All Sections/Groups)

26 OCTOBER 2017
9.00 a.m. - 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of **THREE (3)** pages excluding cover page with **FOUR (4)** questions only.

2. Attempt **ALL FOUR (4)** questions. The distribution of the marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

QUESTION 1

(a) Explain with a brief reason whether each of the following statements is **true**, **false**, or **uncertain**:

(i) All econometric models are essentially dynamic. (5 marks)

(ii) The Koyck model will not make any sense if some of the distributed-lag coefficients are positive while others are negative. (5 marks)

(b) In Box-Jenkins analysis, what does the term of "Moving Average" mean? (5 marks)

(c) Write **short notes** to explain the following econometric concepts:

(i) Causality (5 marks)

(ii) GARCH Model (5 marks)

(Total: 25 marks)

QUESTION 2

(a) Consider the demand equation below:

$$\ln(Q_t) = \alpha_1 + \alpha_2\ln(Y_t) + \alpha_3\ln(P_t) + \alpha_4\ln(PB_t) + e_t^d \quad (2.1)$$

where Q = per capita consumption of chicken, in pounds; Y = real per capital income; P = real price of chicken; PB = real price of beef.

(i) Which are the endogenous variables? (3 marks)

(ii) Which are the exogenous variables? (3 marks)

(b) The supply equation is as follows:

$$\ln(QPROD_t) = \beta_1 + \beta_2\ln(P_t) + \beta_3\ln(PF_t) + \beta_4 TIME_t + \beta_5\ln(QPROD_{t-1}) + e_t^s \quad (2.2)$$

where QPROD = aggregate production of young chickens, PF = nominal price index of broiler feed, TIME = time index with 1950 = 1 to 2001 = 52. This supply equation is dynamic, with lagged production on the right-hand side. This predetermined variable is known at time *t* and is treated as exogenous. TIME is included to capture technical progress in production.

(i) Which are the endogenous variables? (3 marks)

(ii) Which are the exogenous variables? (3 marks)

Continued...

(iii) What is the interpretation of the parameter β_2? (3 marks)

(iv) What signs do you expect for each of the parameters? (4 marks)

(c) Is the order condition for identification satisfied for both the demand equation in part (a) and the supply equation in part (b)? Explain. (6 marks)

(Total: 25 marks)

QUESTION 3

(a) Discuss what you understand about non-stationary variables. (8 marks)

(b) Consider the estimated model $\ln(\hat{Y}_t) = 0.024 + 0.023(\ln Y_{t-1}) - 0.105(\ln X_t)$ (3.1)

Durbin–Watson *d* value=0.001
R-squared=0.1044

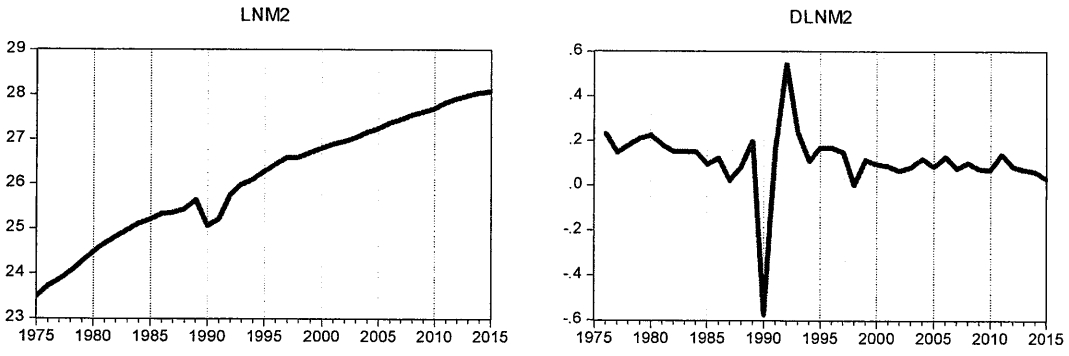
where Y = Gross Domestic Product, in million; X = Export, in million

(i) What is spurious regression? (3 marks)

(ii) Given the Equation (3.1), discuss the phenomenon of spurious regression discovered by Yule (1926). (9 marks)

(c) The left panel of **Exhibit 1** shows a plot of broad money in natural logarithm (LNM2) over 1975 to 2015. The right panel shows the DLNM2 series. The operator D refers to changes of the LNM2 series.

Exhibit 1



Based on the **Exhibit 1**, which series is stationary and which series is not stationary? Explain. (5 marks)

(Total: 25 marks)

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QUESTION 4

(a) Explain the **FOUR (4)** steps involved in the application of Box-Jenkins methodology for forecasting. (12 marks)

(b) Explain any **TWO (2)** tools used for the identification of the model. (3 marks)

(c) A Generalized Autoregressive Conditional Heteroscedascity (GARCH) model is estimated for China data using EViews and the output is shown as below:

Exhibit 2: GARCH Model

Dependent Variable: CHN
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
Sample (adjusted): 1987Q2 2012Q2
Included observations: 101 after adjustments
Convergence achieved after 22 iterations
Coefficient covariance computed using outer product of gradients
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.276426	0.161653	1.709994	0.0873
CHN(-1)	-0.166549	0.031959	-5.211365	0.0000
	Variance Equation			
C	0.248445	0.112997	2.198691	0.0279
RESID(-1)^2	0.761802	0.250282	3.043772	0.0023
GARCH(-1)	0.274061	0.172011	1.593278	0.1111

(i) Based on **Exhibit 2**, write down the mean equation and variance equation. (5 marks)

(ii) Given your answer in part (i) for the China series and the information provided in the **Exhibit 2**, are the estimated coefficients in variance equation significantly different from zero? Explain. (5 marks)

(Total: 25 marks)

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